

WHAT IS CLAIMED IS:

1       Apparatus for applying a flowable adhesive to se-  
2       lected portions of a running web of wrapping material  
3       for smokers' products, comprising:  
4       at least one source of adhesive;  
5       an applicator having at least one adhesive-dis-  
6       charging orifice adjacent a course for the running web;  
7       means for connecting said at least one source with  
8       said applicator; and  
9       means for regulating - including interrupting - the  
10      flow of adhesive in said connecting means, comprising at  
11      least one rotary valve.

1           2. The apparatus of claim 1, wherein said at least  
2 one valve includes a valve body and at least one rotor  
3 disposed in and having a peripheral surface defining with  
4 said body at least one arcuate path for the flow of  
5 adhesive from an inlet to an outlet of said at least one  
6 valve, said peripheral surface including at least one  
7 irregularity arranged to influence the flow of adhesive  
8 from said inlet to said outlet.

1           3. The apparatus of claim 2, wherein said at least  
2 one irregularity includes at least one of (a) at least  
3 one recess, (b) at least one groove, (c) at least one  
4 projection, and (d) at least one lobe.

1           4. The apparatus of claim 2, wherein said body  
2 includes a housing having a chamber for said at least  
3 one rotor.

1           5. The apparatus of claim 1, wherein said appli-  
2 cator has at least one adhesive storing chamber communi-  
3 cating with said at least one orifice.

1           6. The apparatus of claim 1, wherein said at least  
2 one orifice has at least one parameter, including the  
3 depth and the capacity thereof, which is variable to thus  
4 influence the quantity of adhesive being applied to the  
5 web by said applicator.

1           7. The apparatus of claim 1, wherein said orifice  
2 is adjustable.

1           8. The apparatus of claim 1, wherein said  
2 applicator has a first width, said at least one orifice  
3 has a second width, and at least one of said widths is  
4 adjustable.

1           9. The apparatus of claim 1, wherein said  
2 applicator has an arcuate web-contacting surface adjacent  
3 said course for the web.

1           10. The apparatus of claim 1, further comprising  
2 means for varying the pressure of adhesive in said con-  
3 necting means.

1           11. The apparatus of claim 1, wherein said appli-  
2 cator includes a plurality of nozzles each having at  
3 least one adhesive-discharging orifice adjacent said  
4 course for the web, said connecting means including  
5 discrete conduits each connecting said at least one  
6 source with a different one of said nozzles, and further  
7 comprising means for individually selecting the pressure  
8 of adhesive in at least two of said conduits.

1           12. The apparatus of claim 1, wherein said  
2 applicator includes at least two nozzles each having at  
3 least one adhesive-discharging orifice adjacent said  
4 course, said connecting means including at least two  
5 conduits each connecting said at least one source with  
6 a different one of said nozzles, and further comprising  
7 means for maintaining the pressure of adhesive in one  
8 of said at least two conduits at a value which at least  
9 approximates the pressure of adhesive in the other of  
10 said at least two conduits.

1           13. The apparatus of claim 12, wherein said con-  
2     necting means further includes an additional conduit com-  
3     municating with said at least one source, said at least  
4     two conduits having inlets communicating with said addi-  
5     tional conduit and said pressure maintaining means in-  
6     cluding at least one pump disposed in said additional  
7     conduit upstream of said inlets of said at least two con-  
8     duits.

1           14. The apparatus of claim 1, wherein at least  
2     a portion of said applicator has a coat of a material  
3     opposing accumulations of adhesive on the applicator.

1           15. The apparatus of claim 1, further comprising  
2     means for monitoring at least one variable parameter of  
3     adhesive on the web.

1           16. The apparatus of claim 1, wherein said moni-  
2     toring means includes means for ascertaining the quantity  
3     of adhesive being applied to the web.

1           17. The apparatus of claim 15, wherein said  
2 monitoring means includes means for generating signals  
3 denoting the monitored at least one parameter, and  
4 further comprising means for adjusting at least one of  
5 said source, said applicator, said connecting means and  
6 said regulating means as a function of said signals.

1           18. The apparatus of claim 1, wherein said appli-  
2 cator comprises a plurality of nozzles each having at  
3 least one orifice and said regulating means comprises  
4 a rotary valve for each of said nozzles, each of said  
5 valves including a valve body and a rotor disposed in  
6 and having a peripheral surface defining with said body  
7 at least one arcuate path for the flow of adhesive from  
8 an inlet to an outlet of the respective valve, said  
9 peripheral surface of each rotor including at least one  
10 irregularity arranged to influence the flow of adhesive  
11 from the inlet to the outlet of the respective valve.

1           19. The apparatus of claim 18, wherein each of  
2 said peripheral surfaces is provided with a plurality  
3 of irregularities.

1           20. The apparatus of claim 1, further comprising means  
2     for advancing the web along said course at a first speed,  
3     means for rotating a rotor of said at least one valve  
4     at a second speed, and means for synchronizing the  
5     operation of said advancing means with the operation of  
6     said rotating means.

1           21. The apparatus of claim 1, comprising at least  
2     two sources respectively containing different first and  
3     second adhesives, said applicator including first and  
4     second nozzles each having at least one orifice adjacent  
5     said course for the web and said connecting means  
6     including at least one first conduit arranged to convey  
7     first adhesive from the respective source to said first  
8     nozzle and at least one second conduit arranged to convey  
9     second adhesive from the respective source to said second  
10    nozzle.

1           22. The apparatus of claim 1, wherein said valve  
2     has a hollow stator and a rotor rotatable in said stator  
3     about a predetermined axis, said stator and said rotor  
4     defining an arcuate groove disposed in a plane normal  
5     to said axis and extending from an inlet to an outlet of  
6     said valve.

1           23. The apparatus of claim 22, wherein said groove  
2 extends along an arc approximating but less than 360°.

1           24. The apparatus of claim 1, wherein said  
2 applicator includes a plurality of nozzles each having  
3 at least one orifice and each adjacent a different por-  
4 tion of said course, said connecting means including a  
5 plurality of conduits, at least one for each of said  
6 nozzles and each connecting said source with the respect-  
7 ive nozzle.

1           25. The apparatus of claim 24, wherein said source  
2 includes a plurality of discrete sources of different  
3 adhesives, said conduits including at least two conduits  
4 connecting one of said discrete sources with the  
5 respective nozzles.



1           26.    The apparatus of claim 24, wherein said  
2    regulating means includes a plurality of valves each  
3    having a hollow body and a rotor turnable in the  
4    respective body about a predetermined axis, each rotor  
5    having a peripheral surface defining with the respective  
6    body a path leading to one of said nozzles, said bodies  
7    and said rotors cooperating to confine the adhesive to  
8    flow to the respective nozzles.

1           27.    The apparatus of claim 26, wherein said rotors  
2    constitute substantially disc-shaped sections of a rotor  
3    which is common to all of said valves, said hollow  
4    bodies forming part of a stator common to and surrounding  
5    all of said disc-shaped sections, the peripheral surface  
6    of each of said disc-shaped sections having at least one  
7    irregularity arranged to influence the flow of adhesive  
8    within the respective hollow body.

1           28.    The apparatus of claim 27, wherein at least  
2    one of said disc-shaped sections cooperates with the res-  
3    pective hollow body to establish a seal against leakage  
4    of adhesive from the respective valve.

1           29. The apparatus of claim 26, wherein said hollow  
2 bodies have internal surfaces surrounding said rotor  
3 and provided with arcuate grooves for the flow of  
4 adhesive along the respective paths, said grooves having  
5 centers of curvature on said axis.

1           30. The apparatus of claim 29, wherein at least  
2 one of said grooves extends along an arc approximating  
3 but less than 360°.

1           31. The apparatus of claim 24, wherein at least  
2 one of said nozzles has at least one adhesive-storing  
3 chamber communicating with the respective at least one  
4 orifice.

1           32. A method of applying adhesive to selected por-  
2 tions of one side of a web of wrapping material for  
3 smokers' products, comprising the steps of:

4           advancing the web lengthwise along a predetermined  
5 course;

6           placing first and second nozzles adjacent the one  
7 side of the web in a predetermined portion of said course;

8           establishing first and second sources respectively  
9 containing first and second flowable adhesives;

10          conveying adhesives from said first and second  
11 sources to said first and second nozzles; and

12          utilizing the first and second nozzles for the  
13 application of first and second adhesives to said se-  
14 lected portions of one side of the web in said course.

1           33. The method of claim 32, wherein said conveying  
2 step includes inducing the flow of first and second  
3 adhesives to the respective nozzles along discrete first  
4 and second paths.

1           34. The method of claim 32, wherein said utilizing  
2 step includes intermittently applying at least one of  
3 the adhesives to the one side of the web in said course.

1           35. The method of claim 34, wherein said step of  
2 intermittently applying at least one of the adhesives  
3 includes regulating the flow of the at least one adhesive  
4 by a rotary valve.

1           36. The method of claim 32, wherein said conveying  
2 step includes utilizing at least one pump for each of  
3 the first and second adhesives.

1           37. The method of claim 32, wherein said conveying  
2 step includes conveying the first and second adhesives  
3 along discrete first and second paths, and further com-  
4 prising the step of introducing at least one additive  
5 into the adhesive in at least one of the first and second  
6 paths.

1           38. A method of making rod-shaped smokers' pro-  
2       ducts wherein a tubular envelope confines smokable  
3       material and at least a portion of the envelope consists  
4       of a section of a web one side of which is at least  
5       partially coated with at least one film of an adhesive,  
6       comprising the steps of:

7           advancing the web lengthwise along a predetermined  
8       course;

9           establishing at least one source of flowable ad-  
10      hesive;

11          positioning an orifice of at least one nozzle  
12      adjacent a portion of said course at the one side of the  
13      web;

14          conveying adhesive along at least one path extend-  
15      ing from the at least one source to the at least one  
16      nozzle; and

17          regulating the flow of adhesive in said path,  
18      including employing at least one rotary valve.

1           39.    A method of making rod-shaped smokers'  
2 products wherein a tubular envelope confines a smokable  
3 material and at least a portion of the envelope consists  
4 of a section of a web one side of which is at least  
5 partially coated with at least one film of adhesive,  
6 comprising the steps of:

7           advancing the web lengthwise along a predetermined  
8 course;

9           positioning orifices of at least two nozzles  
10 adjacent a portion of said course at one side of the web;

11           establishing at least two sources of flowable ad-  
12 hesive; and

13           conveying flowable adhesive from each of the  
14 sources along a discrete path to a different one of said  
15 nozzles.

1           40.    The method of claim 39, further comprising  
2 the step of maintaining the adhesives in said paths at  
3 different pressures.

1           41. As a novel article of manufacture, a rod-  
2 shaped smokable product including a smokable filler and  
3 a tubular envelope consisting at least in part of a  
4 section of a web having one side at least partially coat-  
5 ed with at least one film of adhesive, said at least one  
6 film containing at least two different types of adhesive.

1           42. The product of claim 41, wherein at least one  
2 of said adhesive types consists at least in part of a  
3 combustion retarding material.

1           43. The product of claim 41, wherein at least one  
2 of said adhesive types contains at least one flavoring  
3 agent.

1           44. The product of claim 41, wherein the filler  
2 consists of cigarette tobacco and a filter mouthpiece.

1           45. The product of claim 41, wherein said section  
2 is a convoluted uniting band of tipping paper.



1           46. The product of claim 45, wherein the band has  
2 a first annular portion at least partially coated with  
3 adhesive containing at least one flavoring agent and a  
4 second annular portion at least partially coated with  
5 adhesive consistig of or containing a combustion retard-  
6 ing material.